Pranav Minasandra

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Max Planck Institute of Animal Behavior,
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Interests | I am broadly interested in systems involving interacting agents, and phenomena emergent thereof. Specifically, I am interested in collective animal behaviour, and my current research focusses on inter-individual influence within social groups.

Education |

Max Planck Institute of Animal Behaviour, Konstanz, Germany — 2020 onwards
PhD - International Max Planck Research School of Organismal Biology

Indian Institute of Science (IISc), Bengaluru, India — 2015 - 2020
- Master of Science in Biology
- Bachelor of Science (Research) with a major in Biology

Publications |

Minasandra, P., & Isvaran, K. (2020). Truncated power-law distribution of group sizes in antelope. *Behaviour*

Research experience |

Social influence at different scales
Doctoral thesis (ongoing): Using a variety of methods, and data from 3 different species, investigated various modes of influence in animal societies and their effects on individuals.

Behaviour state dynamics using accelerometry and Machine Learning
Master thesis: Developed a set of classifiers to analyse spotted hyena accelerometry data, and demonstrated its uses in biology.

Vegetation impermeability and animal movement
Bachelor thesis: Used agent-based methods and field observations to investigate the interactions between impermeable vegetation and animal movement.

Group size distributions in an antelope
Summer research project: Used mathematical and statistical techniques to determine the best possible distribution function to describe group sizes of Blackbuck *Antilope cervicapra*.

Fellowships |

DAAD - Graduate Student Scholarship Programme — 2020 Oct onwards
Nomination following proposal evaluation
€1200 per month for 4 years, as well as additional costs

Kishore Vaigyanik Protsahan Yojana — 2015-2020
All India Rank : 135
Includes stipend and contingency

Teaching |

Teaching Assistantship — 2019 Aug - Dec
For the course *Quantitative Ecology: Research Design and Inference*
Assisted with coding in R, conducted several classes, graded assignments, managed course website.

Mentorship

Amlan Nayak — 2022 Jun onwards
Master thesis: Investigating meerkat collective behaviour using accelerometer data.

Ananya Passi — 2019 Jun-2020 May
Summer research: Mathematical modelling of habitat use and population dynamics.

Contributed talks:

Descriptive & Normative Models of Collective Behaviour — 2022 June
School of Mathematics, University of Leeds
"Looking into hyena daily activity patterns using accelerometers"

Animal Behaviour Society - Virtual Seminar 2021 — 2021 Aug
"Behavioural classifier provides insights into spotted hyena behaviour"

Technical skills

Programming languages and related
Python 3, R, Bash, LaTeX, Matlab, and C. HTML, CSS, and git.

Mathematical modelling
Models incorporating spatial and stochastic variables; Non-linear dynamics, including population dynamics and evolutionary dynamics; Probability models; Numerical simulations of all the above.

Statistics
Strong background with probability theory; Distribution fitting; Heavy-tailed distribution fitting; Quantitative analysis of movement; GLMs; Linear Models; Mixed Models; Basic statistical techniques

Computational skills
Parallel processing in Python using `multiprocessing`; Methods in machine learning; Front-end development in `R Shiny`; Agent based models; data visualisation using `matplotlib`;

Miscellanea

- An interactive age-structured COVID-19 compartmental model for Indian states
- Convener, Naturalists - the IISc UG Biology Club
- Umwelten (lecture series)
- UG Theoretical Biology Circle at IISc

References

Dr Alex L Jordan,
Max Planck Institute of Animal Behavior
ajordan@ab.mpg.de

Dr Ariana Strandburg-Peshkin,
Max Planck Institute of Animal Behavior
arianasp@gmail.com

Dr Kavita Isvaran,
Indian Institute of Science
kavita@iisc.ac.in

Dr Vishwesha Guttal,
Indian Institute of Science
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